CSC 481 Knowledge Based Systems

1. CSC 481 Knowledge Based Systems

2. **credit units** 4    **contact hours** 6

3. **Course Coordinator:** Franz Kurfess


5. a. **Course Description:** In-depth treatment of knowledge representation, utilization and acquisition in a programming environment. Emphasis on the use of domain-specific knowledge to obtain expert performance in programs. 3 lectures, 1 laboratory.

   b. **Prerequisite:** CSC 480.

   c. **Required/Elective/Selective Elective for CPE, CSC, EE, SE**

<table>
<thead>
<tr>
<th>Required/Elective</th>
<th>CSC</th>
<th>CPE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Selective Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. a. **Course Goals/Outcomes**

   The student will be able to:
   - Explain and compare the fundamental approaches, algorithms and architectures of at least three major artificial intelligence paradigms (for example, expert systems, fuzzy logic, neural networks, blackboard systems, natural language processing, etc.)
   - Apply these approaches in the design and development of knowledge-based systems
   - Use these paradigms in practical programming projects
   - Apply this knowledge, understanding and experience to a particular problem domain.

   b. **How Student Outcomes addressed**

   (“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>SE/CPE</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>A</td>
</tr>
</tbody>
</table>

7. **Major Topics Covered:** (number of lecture hours each)
• Introduction to Expert Systems (4)
• Problem Solving Using Expert Systems (6)
  (general design principles and structures of expert systems, examples of historical
  systems, use of a high-level software development environment such as CLIPS or Jess)
• Reasoning Methods for Expert Systems (4)
• Advanced Agent Concepts and Knowledge Based Systems (3)
• Current Topics in Artificial Intelligence (3)
• Practical Applications and Project Reviews (10)